VERIFICATION REPORT

- 3RD PERIODIC –

THE WORLD BANK PROTOTYPE CARBON FUND

"CZECH UMBRELLA JI PROJECTS"

Period of District Heating Projects: 01.04. 2006 – 31.12.2007

Period of Small Hydro Projects: 01.01.2006 – 31.12.2007

Report No: 8000364962 – 08/371

Date: 2009-05-12

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Verification Report:	***Report No.***	***Rev. No.***	***Date of 1st issue:***	***Date of this rev.***
	8000364962 – 08/371	0	2009-05-12	2009-05-12
Project:	***Title:***		***Registration date:***	***UNFCCC-No.:***
	Czech Umbrella JI projects		N/A	Track I project
Project Participant(s):	***Host party:***		***Other involved parties:***	
	Czech Republic			
Applied methodology/ies:	***Title:***		***No.:***	***Scope:***
	Project specific methodology		N/A	N/A
Monitoring:	***Monitoring period (MP):***		***No. of days:***	***MP No.***
	Period of District Heating Projects: 01.04. 2006 – 31.12.2007		640	2
	Period of Small Hydro Projects: 01.01.2006 – 31.12.2007		730	
Monitoring report:	***Title:***		***Draft version:***	***Final version:***
	4th Monitoring period_SHPs January 1st, 2006 – December 31st, 2006		August 30th, 2007	Version 3, March 2009
	2007 Payment_SHPs January 1st, 2007 – December 31st, 2007		Version 2 July 10th, 2008	
	4th Monitoring period_Rozmital&Decin April 1st, 2006 – December 31st, 2006		August 30th, 2007	
	5th Monitoring period_Rozmital&Decin January 1st, 2007 – December 31st, 2007		Version 2 July 10th, 2008	
Verification team / Technical Review and Final Approval	***Verification Team:***		***Technical review:***	***Final approval:***
	Rainer Winter Evgeni Sud Petr Matusinsky		Eric Krupp	Rainer Winter
Emission reductions: [t CO_{2e}]	***Verified amount***			
	103,121 t CO2e			
Summary of Verification Opinion:	The World Bank (Prototype Carbon Fund) has commissioned the TÜV NORD JI/CDM Certification Program to carry out the 3rd periodic verification of the project: "CZECH UMBRELLA JI PROJECTS", with regard to the relevant requirements for JI project activities. The umbrella of projects can be divided in two groups: District heating (DH) and Small Hydro Projects (SHD). Within the district heating group the emission reduction is realized by a fuel switch from coal to gas. Within the small hydro projects the emission reduction is achieved by the renewable production of electricity which is fed into the national grid. This verification covers the period: District Heating Projects: 01.04.2006 – 31.12.2007 Small Hydro Projects: 01.01.2006 – 31.12.2007 In the course of the verification 7 Corrective Action Requests (CAR) and 11 Clarification Requests (CR) were raised and successfully closed. No FARs have been raised to improve the monitoring system in the future. The verification is based on the draft monitoring report, revised monitoring report, the validated monitoring plan, the 1st verification report, emission reduction calculation spreadsheet and supporting documents made available to the			

	TÜV NORD JI/CDM CP by the project participant. As a result of this verification, the verifier confirms that: • all operations of the project are implemented and installed as planned and described in the validated project design document. • the monitoring plan is in accordance with the validated project specific monitoring plan developed for DH and SHD project activities. • the installed equipment essential for measuring parameters required for calculating emission reductions are calibrated appropriately. • the monitoring system is in place and functional. The project has generated GHG emission reductions. As the result of the 3rd periodic verification, the verifier confirms that the GHG emission reductions are calculated without material misstatements in a conservative and appropriate manner. TÜV NORD JI/CDM CP herewith confirms that the project has achieved emission reductions in the above mentioned reporting period as follows: Sub-project Time period Amount in CO2e Rozmital and Decin 01.04.2006 – 31.12.2006 11,796 t CO2e Rozmital and Decin 01.01.2007 – 31.12.2007 20,284 t CO2e Small Hydro Projects 01.01.2006 – 31.12.2006 31,575 t CO2e Small Hydro Projects 01.01.2007 – 31.12.2007 39,466 t CO2e **Total amount of emission reductions:** **103,121 t CO2e**.
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Abbreviations:

CA	**Corrective Action / Clarification Action**
CAR	**Corrective Action Request**
CDM	**Clean Development Mechanism**
CER	**Certified Emission Reduction**
CO_2	**Carbon dioxide**
CO_{2eq}	**Carbon dioxide equivalent**
CR	**Clarification Request**
DH	**District Heating**
ER	**Emission Reduction**
ERU	**Emission Reduction Unit**
FAR	**Forward Action Request**
GHG	**Greenhouse gas(es)**
JI	**Joint Implementation**
JISC	**Joint Implementation Supervisory Committee**
MP	**Monitoring Plan**
MR	**Monitoring Report**
PDD	**Project Design Document**
PP	**Project Participant**
SHP	**Small hydro projects**
QA/QC	**Quality Assurance / Quality Control**
UNFCCC	**United Nations Framework Convention on Climate Change**
XLS	**Emission Reduction Calculation Spread Sheet**

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1. INTRODUCTION

The World Bank (Prototype Carbon Fund) has commissioned the TÜV NORD JI/CDM Certification Program (CP) to carry out the 3rd periodic verification of the project

"CZECH UMBRELLA JI PROJECTS"

with regard to the relevant requirements for JI project activities. The verifiers have reviewed the implementation of the monitoring plan (MP) in the positive validated JI project activity number.

GHG data for the monitoring period covering

District Heating Projects: **01.04. 2006 – 31.12.2007**

Small Hydro Projects: **01.04.2006 – 31.12.2007**

was verified in detailed manner applying the set of requirements, audit practices and principles of the UNFCCC.

This report summarizes the findings and conclusions of this 3rd periodic verification of the above mentioned JI project activity.

The umbrella of projects in the Czech Republic (CZ) encompasses two groups of projects. Within the first group the emission reduction is realized by a fuel switch from coal to gas in **district heating facilities** of the cities Rozmital and Decin. Within the second group emission reduction is realized through electricity generation in **small hydro plants** which is fed into the national grid and replaces fossil fuel generated electricity.

1.1. Objective

The objective of the verification is the review and ex-post determination by an independent entity of the GHG emission reductions. It includes the verification of the:

- Implementation and operation of the project activity as given in the PDD,
- compliance with provisions of the monitoring plan,
- data given in the monitoring report by checking the monitoring records, the emissions reduction calculation and supporting evidence
- accuracy of the monitoring equipment
- quality of evidence
- significance of reporting risks and risks of material misstatements.

1.2. Scope

The verification of this registered project is based on the validated project design document /PDD/including baseline, the monitoring report /MR/, emission reduction

calculation spread sheet /XLS/, supporting documents made available to the verifier and information collected through performing interviews and during the on-site assessment. Furthermore publicly available information was considered as far as available and required.

The verification is carried out on the basis of the following requirements, applicable for this project activity:

- Article 6 of the Kyoto Protocol /KP/,
- guidelines for the implementation of Article 6 of the Kyoto Protocol as presented UNFCCC/Kyoto Protocol requirements, in particular, the requirements of the JI as set out in decision 9/CMP.1 the present annex and relevant decisions by the JISC,
- other relevant rules, including the host country legislation,
- CDM Validation and Verification Manual /VVM/,
- monitoring plan as given in the registered PDD /PDD/,
- Applied Methodology: Each group of projects – district heating and small hydro projects – apply their **own baseline approaches** which were positive validated in the course of determination PDD.

The Czech Ministry of Industry and Trade (MIT) has provided four emission reduction reports. These are - two DH projects and two the SHP project reports.

14 Small Hydro plants:

The Emissions Reduction Report, 3rd Monitoring Period SHP covering 14 Small Hydro Power Plants within the time period between **1st January 2006 and 31st December 2006**:

1. • Hydro Horky
2. • Hydro Kostice
3. • Hydro Decin
4. • Hydro Olse
5. • Hydro Tynec Sazavou – Brodce
6. • Hydro Frantiskov
7. • Hydro Libochovice
8. • Hydro Patec
9. • Hydro Smržovka-Kamenice
10. • Hydro Černys
11. • Hydro Čerčany
12. • Hydro Benátky nad Jizerou
13. • Hydro Les - Kralovstvi
14. • Hydro Libocani

15 Small Hydro plants:

The Emissions Reduction Report, 3rd Monitoring Period SHP covering 14 Small Hydro Power Plants within the time period between **1st January 2007** and **31st December 2007**:

1. • Hydro Horky
2. • Hydro Kostice
3. • Hydro Decin
4. • Hydro Olse
5. • Hydro Tynec Sazavou – Brodce
6. • Hydro Frantiskov
7. • Hydro Libochovice
8. • Hydro Patec
9. • Hydro Smržovka-Kamenice
10. • Hydro Černys
11. • Hydro Čerčany
12. • Hydro Benátky nad Jizerou
13. • Hydro Les - Kralovstvi
14. • Hydro Libocani
15. • Hydro Bulhary

District Heating projects:

For the two District Heating projects in Rožmitál and Děčín, Czech Ministry of Industry and Trade (MIT) has submitted the monitored reports:

• Emissions Reduction Report 4th Monitoring period for Rozmital&Decin covering the time period between **01 April 2006** and **31 December 2006** and

• Emissions Reduction Report 5th Monitoring period for Rozmital&Decin covering the time period between **01 January 2007** and **31 December 2007.**

2. GHG PROJECT DESCRIPTION

2.1. Project Characteristics

The Prototype Carbon Fund (PCF) signed a Host Country Agreement and an Emissions Purchase Agreement with the Czech Republic in 2003 to formalize the terms under which carbon emission reductions will be purchased. The thrust of the PCF umbrella project is to add carbonbased support to projects that were considered by the Czech Energy Agency (CEA) and the State Environmental Fund (SEF). The Czech Ministry of Industry and Trade (MIT) took over all responsibilities regarding the project from the Czech Energy Agency (CEA) on December 31, 2007 when CEA was dissolved by the government decree.

The "Czech Umbrella JI Projects" currently consists of 15 small hydro projects and two district heating projects in Czech Republic. One of these hydro projects has yet to come on-line and therefore does not require verification.

Methodology: In the case of the small hydros, they all use the same standardized approach prepared by Prototype Carbon Fund (PCF) for grid-connected electricity generation from renewable sources. This approach was positive validated by the Det Norske Veritas (DNV) in the course of determination PDD. A specific approach to determine emission reduction realized through the two District Heating projects has been developed by PCF and determined by the Det Norske Veritas (DNV) in the course of determination PDD.

Essential data of the project is presented in the following Table 2-1.

Table 2-1: Project Characteristics

Item	Data	
Project title	Czech Umbrella JI Projects	
Project size	☐ Large Scale ☒ Small Scale	
JI registration No.	Registered as per the Track I procedures	
Project Scope (according to UNFCCC sectoral scope numbers for JI)	1	Energy Industries (renewable - / non-renewable sources)
Applied Methodology	Project specific methodology	

2.2. Involved Parties and Project Participants

The following parties to the Kyoto Protocol and project participants are involved in this project activity (Table 2-2).

Table 2-2: Project Parties and project participants

Characteristic	Party	Project Participant
Host party	Czech Republic	Ministry of Industry and Trade of the Czech Republik

2.3. Project Location

Project is located in the Czech Republic.

The details of the project location are given in table 2-3:

Table 2-3-1: Project Location – **Small Hydro Projects**

No.	Project Location
Host Country	Czech Republic
Project location:	• Horky • Kostice • Decin • Olse • Tynec Sazavou – Brodce • Frantiskov • Libochovice • Patec • Smržovka-Kamenice • Černys • Čerčany • Benátky nad Jizerou • Les - Kralovstvi • Libocani • Bulhary

Table 2-3-2: Project Location – **District Heating Projects**

No.	Project Location
Host Country	Czech Republic
Project location:	• Rozmital • Decin

2.4. Technical Project Description

The "Czech Umbrella JI Projects" currently consists of 15 small hydro projects and two district heating projects in Czech Republic. For all types of projects the PCF developed individual baseline studies and calculation approaches that have been determined by Det Norske Veritas (DNV).

The **hydro power projects** are characterized by a refurbishment of old small hydro power plants. Within the retrofit the outdated equipment has been dismantled and the new equipment has been installed. According to the elaborated baseline study for determining a grid factor, the produced electricity substitutes electricity from conventional power plants.

The key parameters for the project are given in table 2-4-1 and 2-4-2:

Table 2-4-1: Technical data of the plant – **Small Hydro Plants**

Parameter	Unit	Value
1. Horky	kW	110
2. Kostice	kW	145
3. Decin	kW	212
4. Olse	kW	362
5. Tynec Sazavou – Brodce	kW	290
6. Frantiskov	kW	320
7. Libochovice	kW	250
8. Patec	kW	250
9. Smržovka-Kamenice	kW	250
10. Černys	kW	250
11. Čerčany	kW	170
12. Benátky nad Jizerou	kW	856
13. Les - Kralovstvi	MW	2.21
14. Libocani	kW	640
15. Bulhary	kW	740

The **district heating projects** are characterized by a fuel switch from carbon intensive fuels like coal to less carbon intensive fuels like natural gas. The efficiency of the district heating facilities has been improved as well in the course of the project implementation. Both effects result in a reduction of carbon dioxide.

Within the Rozmital District Heating project without the implementation of the JI project activity the space heat and hot tap water would be provided to the three old coal fired boilers.

Table 2-4-2: Technical data of the plant – **District Heating Projects**

Parameter	Unit	Value
1. Rozmital	kW	110
2. Decin	kW	212

3. METHODOLOGY AND VERIFICATION SEQUENCE

3.1. Verification Steps

The verification consisted of the following steps:

- Contract review
- Appointment of team members and technical reviewers
- Publication of the monitoring report
- A desk review of the Monitoring Report /MR/ submitted by the client and additional supporting documents with the use of customised verification protocol /CPM/ according to the Validation and Verification Manual /VVM/,
- Verification planning,
- On-Site assessment,
- Background investigation and follow-up interviews with personnel of the project developer and its contractors,
- Draft verification reporting
- Resolution of corrective actions (if any)
- Final verification reporting
- Technical review
- Final approval of the verification.

The verification of this project was carried out from November 2008 to May 2009:

3.2. Contract review

To assure that

- the project falls within the scopes for which accreditation is held,
- the necessary competences to carry out the verification can be provided,
- Impartiality issues are clear and in line with the CDM accreditation requirements

a contract review was carried out before the contract was signed.

3.3. Appointment of team members and technical reviewers

On the basis of a competence analysis and individual availabilities a verification team, consistent of one team leader and 3 additional team members, was appointed. Furthermore also the personnel for the technical review and the final approval were determined.

The list of involved personnel, the tasks assigned and the qualification status are summarized in the table 3-1 below.

Table 3-1: Involved Personnel

	Name	Company	Function [1)]	Qualification Status [2)]	Sectoral competence	Technical competence	Host country Competence	Controlling competence
☒ Mr. ☐ Ms.	Rainer Winter	TÜV NORD	TL, FA	SA	x	x	-	x
☒ Mr. ☐ Ms.	Evgeni Sud	TÜV NORD	TM	E	x	x	-	-
☒ Mr. ☐ Ms.	Petr Matusinsky	TÜV NORD Czech	TM	T	x	x	x	-
☒ Mr. ☐ Ms.	Eric Krupp	TÜV NORD	TR	SA	x	x	-	x

[1)] TL : Team Leader; TM : Team Member, TR: Technical review; FA: Final approval;

[2)] GHG Auditor Status: A : Assessor; E : Expert; SA: Senior Assessor; T : Trainee, TE: Technical Expert

3.4. Publication of the Monitoring Report

The monitoring reports, as received from the project participants, have not been made publicly available.

3.5. Verification Planning

In order to ensure a complete, transparent and timely execution of the verification task the team leader has planned the complete sequence of events necessary to arrive at a substantiated final verification opinion.

Various tools have been established in order to ensure an effective verification planning.

Risk analysis and detailed audit testing planning

For the identification of potential reporting risks and the necessary detailed audit testing procedures for residual risk areas table A-1 is used. The structure and content of this table is given in table 3-2 below.

Table 3-2: Table A-1; Identification of verification risk areas

Table A-1: GHG calculation procedures and management control testing / Detailed audit testing of residual risk areas and random testing				
Identification of potential reporting risk	**Identification, assessment and testing of management controls**	**Areas of residual risks**	**Additional verification testing performed**	**Conclusions and Areas Requiring Improvement (including *Forward Action Requests*)**
The following potential risks were identified and structured according to the possible areas of occurance.	*The potential risks of raw data generation have been identified in the course of the monitoring system implementation.* *The following measures were taken in order to minimize the corresponding risks.* *The following measures are implemented:*	*Despite the measures implemented in order to reduce the occurrence probability the following residual risks remain and have to be addressed in the course of every verification.*	*The additional verification testing performed is described. Testing may include:* - *Sample cross checking of manual transfers of data* - *Recalculation* - *Spreadsheet 'walk throughs' to check links and equations* - *Inspection of calibration and maintenance records for key equipment* - *Check sampling analysis results* *Discussions with process engineers who have detailed knowledge of process uncertainty/error bands.*	*Having investigated the residual risks, the conclusions should be noted here. Errors and uncertainties are highlighted.*

The completed table A-1 is enclosed in the annex (table A-1) to this report.

Project specific periodic verification checklist

In order to ensure transparency and consideration of all relevant assessment criteria, a project specific verification protocol has been developed. The protocol shows, in a transparent manner, criteria and requirements, means and results of the verification. The verification protocol serves the following purposes:

- It organises, details and clarifies the requirements a JI project is expected to meet for verification
- It ensures a transparent verification process where the verifying DOE documents how a particular requirement has been proved and the result of the verification.

The basic structure of this project specific verification protocol for the periodic verification is described in table 3-3.

Table 3-3: Structure of the project specific periodic verification checklist

Table A-2: Periodic Verification Checklist			
Expectations for GHG data management system/controls	***Comments***	***Draft Concl.***	***Final Concl.***
The project operator's data management system/controls are assessed to identify reporting risks and to assess the data management system's/control's ability to mitigate reporting risks. The GHG data management system/controls are assessed against the expectations detailed in the table.	*Description of circumstances and further commendation to the conclusion.*	*This is either acceptable based on review of MR and supporting Documents (**OK**), or a **Corrective Action Request (CAR)** of risk or non-compliance with stated requirements. The corrective action requests are numbered and presented to the client in the Draft Verification report. The Initial Verification has additional **Forward Action Requests (FAR)**. FAR indicates essential risks for further periodic verifications*	*CARs and CRs raised in the Draft Conclusion have to be closed or resolved. The final conclusion determines the final statement. FARs could remain in this section as they are subject in the next consecutive verification.*

The periodic verification checklist (verification protocol) is the backbone of the complete verification starting from the desk review until final assessment. Detailed assessments and findings are discussed within this checklist and not necessarily repeated in the main text of this report.

The completed verification protocol is enclosed in the annex (table A-2) to this report.

3.6. Desk review

During the desk review all documents initially provided by the client and publicly available documents relevant for the verification were reviewed. The main documents are listed below:

- the last revision of the PDD including the monitoring plan/PDD/,
- the last revision of the validation report/VAL/,
- the monitoring reports for the small hydro and district heating projects, including the claimed emission reductions for the project/MR/,
- the emission reduction calculation spreadsheets for small hydro and district heating projects/XLS/

Other supporting documents, such as publicly available information on the UNFCCC website and background information were also reviewed.

3.7. On-site assessment

As most essential part of the verification exercise it is indispensable to carry out an inspection on site in order to verify that the project is implemented in accordance with the applicable criteria. Furthermore the on-site assessment is necessary to check the monitoring data with respect to accuracy to ensure the calculation of emission reductions. The main tasks covered during the site visit include, but are not limited to:

- The on-site assessment included an investigation of whether all relevant equipment is installed and works as anticipated.
- The operating staff was interviewed and observed in order to check the risks of inappropriate operation and data collection procedures.
- Information processes for generating, aggregating and reporting the selected monitored parameters were reviewed.
- The duly calibration of all metering equipment was checked.
- The monitoring processes, routines and documentations were audited to check their proper application.
- The monitoring data were checked completely.
- The data aggregation trails were checked via spot sample down to the level of the meter recordings.

The on-site audit was carried out on 2008-11-21.

Before and during the on-site visit the verification team performed interviews with the project participants to confirm selected information and to resolve issues identified in the document review.

Representatives of World Bank and Ministry of Industry and Trade including the operational staff of the plant were interviewed. The main topics of the interviews are summarised in Table 3-4.

Table 3-4: Interviewed persons and interview topics

Interviewed Persons / Entities	Interview topics
1. Projects & Operations Personnel, World Bank and Ministry of Industry and Trade	- General aspects of the project - Technical equipment and operation - Changes since validation - Monitoring and measurement equipment - Remaining issues from validation - Calibration procedures - Quality management system - Involved personnel and responsibilities - Training and practice of the operational personnel - Implementation of the monitoring plan - Monitoring data management - Data uncertainty and residual risks - GHG calculation - Procedural aspects of the verification - Maintenance - Environmental aspects

3.8. Draft verification reporting

On the basis of the desk review, the on-site visit, follow-up interviews and further background investigation the verification protocol is completed. This protocol together with a general project and procedural description of the verification and a detailed list of the verification findings form the draft verification report. This report is sent to the client for resolution of raised CARs, CRs and FARs.

3.9. Resolution of CARs, CRs and FARs

Nonconformities raised during the verification can either be seen as a non-fulfilment of criteria ensuring the proper implementation of a project or where a risk to deliver high quality emission reductions is identified.

Corrective Action Requests (CARs) are issued, if:

- there is a clear deviation concerning to the above mentioned applicable criteria (esp. the monitoring plan).
- requirements set by the monitoring plan or qualifications in the validation opinion have not been met; or
- there is a risk that the project would not be able to deliver emission reductions.

Forward Action Requests (FAR) indicate essential risks for further periodic verifications. Forward Action Requests are issued, if:

- the actual status requires a special focus on this item for the next consecutive verification, or
- an adjustment of the monitoring plan is recommended.

The verification team uses the term Clarification Request (CR), which is be issued if:

- additional information is needed to fully clarify an issue.

For a detailed list of all CARs, CRs and FARs raised in the course of the verification pl. refer to chapter 4.

3.10. Final reporting

Upon successful closure of all raised CARs and CRs the final verification report including a positive validation opinion can be issued. In case not all essential issues could finally be resolved, a final report including a negative validation opinion is issued.

The final report summarizes the final assessments w.r.t. all applicable criteria.

3.11. Technical review

Before submission of the final verification report a technical review of the whole verification procedure is carried out. The technical reviewer is a competent GHG auditor being appointed for the scope this project falls under. The technical reviewer is not considered to be part of the verification team and thus not involved in the decision making process up to the technical review.

As a result of the technical review process the verification opinion and the topic specific assessments as prepared by the verification team leader may be confirmed or revised. Furthermore reporting improvements might be achieved.

3.12. Final approval

After successful technical review an overall (esp. procedural) assessment of the complete verification will be carried out by a senior assessor located in the accredited premises of TÜV NORD.

After this step the request for issuance can be started.

4. VERIFICATION FINDINGS

In the following paragraphs the findings from the desk review of the monitoring report[/MR/], the calculation spreadsheet[/XLS/], PDD[/PDD/], the Validation Report[/VAL/] and other supporting documents, as well as from the on-site assessment and the interviews are summarised.

The summary of CAR, FAR and CR issued are shown in Table 4-1:

Table 4-1: Summary of CAR, CR and FAR

Verification topic	No. of CAR	No. of CR	No. of FAR
H - Project history	1	0	0
U - Update on Changes and Incidents	0	3	0
R - Monitoring Report – General	5	7	0
P - Monitoring Parameters	0	0	0
C - Emission Reduction Calculation	1	1	0
Q - Quality Management	0	0	0
SUM	**7**	**11**	**0**

The following tables include all raised CARs, CRs and FARs and the assessments of the same by the verification team. For an in depth evaluation of all verification items it should be referred to the verification protocols (see Annex).

Monitoring Report	**CAR H1 – SHP/DH**			
Classification	☒ CAR	☐ FAR	☐ CR	☐ None
Findings	**Corrections made in response on FARs:** A more detailed information should be provided in the Monitoring Reports about the actions taken in response to the FARs raised within the last verification.			

Monitoring Report	**CAR H1 – SHP/DH**
Corrective Action	The following has been added to the 2007 monitoring reports and reflects actions taken by MIT once it assumed responsibility for the project that year. In order to ensure the accuracy of submitted data and in compliance with the conclusions of the verification report the Ministry of Industry and Trade has introduced a two-stage quality assurance system. In the first stage the data were consulted with small hydro plants runners and filled in into spreadsheets by Jana Piecha, Energy Officer, Energy Department, and recalculated by use of pre-set calculation formulae. The complementary statistic data were consulted with the Statistics Department of the Ministry of Industry and Trade, which cooperates with the Czech Statistics Office on carrying out of the Czech national statistics. In the second stage the data and calculations were in detail checked by Mr. Pavel Gebauer, head of Renewable Energy and Energy Savings Department who is in charge of running the Prototype Carbon Fund Project in the Ministry of Industry and Trade. The final emission reduction reports and annual reports to the PCF were approved by the Director of Energy Department, Mr. Roman Portužák, and the Deputy Minister Mr. Tomáš Hüner, Power Section, Ministry of Industry and Trade. A data processing schematic has also been produced.

Monitoring Report	**CAR H1 – SHP/DH**
Assessment AIE	In the course of the first verification two Forward action requests have been raised in order to request the project participant to improve its data management system as well to establish a quality assurance system to ensure high quality project management of all sub-projects. In order to comply with these requirements project participant has improved the procedures for data management and processing within the particular stages of the monitoring. Double check procedures have been introduced to ensure high quality project management of all sub-projects. Different tasks within the monitoring are clearly allocated to the personal of the different departments of the Ministry of Industry and Trade. Personal and the corresponding tasks/responsibilities of the project monitoring are clearly defined. Furthermore all procedures have been clearly documented. A sufficient confidence has been gained that the introduced two stage quality assurance system provides procedures and provisions for an accurate and appropriate monitoring of of generated emission reductions.
Conclusion	☐ To be checked during next periodic verification ☒ Appropriate action was taken ☐ MR was corrected correspondingly ☐ Appropriate action was not taken ☒ The project complies with the requirements

Monitoring Report	**CR U1**			
Classification	☐ CAR	☐ FAR	☒ CR	☐ None
Findings	**Number of district heating consumers:** The reason why the number of the district heating consumers has been changed from the end 2006 to the beginning 2007 should be provided in the monitoring report.			

Monitoring Report	**CR U1**
Corrective Action	This typo has been corrected in the 2007 monitoring report for district heating projects and the new numbers indicate a small drop in costumers first 10 months of 2007, due to change to different heating sources. There was an increase in customers at the beginning of the winter heating season with increasing demand in November and December.
Additional comment	As per the provided monitoring reports the number of district heating consumers has been changed from the end 2006 to the beginning 2007. The reason for the deviation has been provided. The explanation has been included in the monitoring reports and deemed to be plausible.
Conclusion	☐ To be checked during next periodic verification ☒ Appropriate action was taken ☐ MR was corrected correspondingly ☐ Appropriate action was not taken ☒ The project complies with the requirements

Monitoring Report	**CR U2 Rozmital**			
Classification	☐ CAR	☐ FAR	☒ CR	☐ None
Findings	The difference between the indicated capacity of the new gas-fired boilers in the monitoring plan (3.1MW) and the spreadsheets (2.1MW) is unclear.			
Corrective Action	Still awaiting clarification from Rozmital, however, this has no bearing on emission reductions.			
Additional comment	In the course of verification a difference between the indicated capacity of the new gas-fired boilers in the monitoring plan (3.1MW) and the spreadsheets (2.1MW) has been observed. The clarification is still pending. However this value is irrelevant for the calculation of emission reductions. The emission reductions are based on the actual data on the energy generation and consumptions. The input values have been evidenced and have been proved in the course of determination. It has been verified that the emission reductions have been determined based on the actual energy data. Project participant is requested to clarify this issue within the next monitoring period.			

Monitoring Report	**CR U2 Rozmital**
Conclusion	☐ To be checked during next periodic verification ☒ Appropriate action was taken ☐ MR was corrected correspondingly ☐ Appropriate action was not taken ☒ The project complies with the requirements

Monitoring Report	**CR U3 Decin**			
Classification	☐ CAR	☐ FAR	☒ CR	☐ None
Findings	**Figures in October and November 2007** Please explain the reason for a significant decrease of the following parameters in October and November 2007: • Gas Consumption by Gas Motors in TCM • Electric Production by Gas Motors Ex Plant in MWh • Heat Production by Gas Motors Ex Plant in TJ			
Corrective Action	Regular service on small co-generation unit (every 30,000 hours) during October and November 2007, production was realized only on boiler.			
Additional comment	The reason for the decrease of the above mentioned parameters has been provided and deemed to be reasonable.			
Conclusion	☐ To be checked during next periodic verification ☒ Appropriate action was taken ☐ MR was corrected correspondingly ☐ Appropriate action was not taken ☒ The project complies with the requirements			

Monitoring Report	**CAR R1 – DH**			
Classification	☒ CAR	☐ FAR	☐ CR	☐ None

Monitoring Report	**CAR R1 – DH**
Findings	**1. Overlapping of crediting periods:** The previous verified crediting period for DH projects was for the time period between 01/04/2004 and 31/03/2006. The monitoring report for this crediting period starts on 01/01/2006. Hence there is an overlapping of crediting periods. **2. Emission reductions** achieved in January, February and March 2006 should be taken out of the Monitoring reports.
Corrective Action	This has been corrected in the 2006 monitoring report for district heating projects. A footnote has also been included to explain the change in verification periods.
Additional comment	Yes, the monitoring reports for the DH projects have been revised and the overlapping of crediting periods has been eliminated. The second monitoring period is consistent with the first monitoring period. The name of the monitoring report clearly indicates the correct crediting period. Though the information about the emission reductions achieved in January, February and March 2006 is included in the monitoring report the corresponding values have been appropriately taken out of the total amount of emission reductions.
Conclusion	☐ To be checked during next periodic verification ☒ Appropriate action was taken ☐ MR was corrected correspondingly ☐ Appropriate action was not taken ☒ The project complies with the requirements

Monitoring Report	**CAR R2- SHP**			
Classification	☒ CAR	☐ FAR	☐ CR	☐ None
Findings	**Page numbers, the date of issuance** and **revision number** should be indicated in the Monitoring reports for the district heating and small hydro projects.			
Corrective Action	This has been corrected in the monitoring reports.			
Additional comment	The corresponding corrections have been appropriately carried out in the monitoring reports. Page numbers, the date of issuance and revision number are now indicated in the monitoring reports for the district heating and small hydro projects.			

Monitoring Report	**CAR R2- SHP**
Conclusion	☐ To be checked during next periodic verification ☒ Appropriate action was taken ☐ MR was corrected correspondingly ☐ Appropriate action was not taken ☒ The project complies with the requirements

Monitoring Report	**CR R3 – SHP**			
Classification	☐ CAR	☐ FAR	☒ CR	☐ None
Findings	**Capacity of small hydro projects:** Capacity of the turbines for Horky, Decin, Libochovice, Tynec nad Sazavao – Brodce as indicated in the Monitoring Report for the small hydro projects deviate from that indicated in the corresponding Baseline studies and Monitoring plans.			
Corrective Action	Typos were corrected in the 2007 monitoring report for Horky, Decin, and Libochovice small hydros. No discrepancy can be found for Tynec, the capacity is 290 kW in all documents.			
Additional comment	The corresponding corrections have been appropriately carried out in the monitoring reports. Previous deviations were minor in size. However the data in the monitoring reports is now consistent with the corresponding Baseline studies and Monitoring plans.			
Conclusion	☐ To be checked during next periodic verification ☒ Appropriate action was taken ☐ MR was corrected correspondingly ☐ Appropriate action was not taken ☒ The project complies with the requirements			

Monitoring Report	**CAR R4- SHP/DH**			
Classification	☒ CAR	☐ FAR	☐ CR	☐ None
Findings	**Decision** of the Czech Minister of Industry and Trade No.238/2007 should be corrected.			
Corrective Action	This has been corrected in the monitoring reports.			
Additional comment	Decision of the Czech Minister of Industry and Trade No. 235/2007 is now appropriately indicated in the monitoring reports.			
Conclusion	☐ To be checked during next periodic verification ☒ Appropriate action was taken ☐ MR was corrected correspondingly ☐ Appropriate action was not taken ☒ The project complies with the requirements			

Monitoring Report	**CAR R5 – SHP**			
Classification	☒ CAR	☐ FAR	☐ CR	☐ None
Findings	**Electricity generation by each site:** Electricity generation by each side should be provided in Table form in the Monitoring report.			
Corrective Action	This has been included in both monitoring reports for small hydros.			
Additional comment	Electricity generation by each site has been provided in table form in the Monitoring report. Provided data is in line with the corresponding Excel spreadsheets.			
Conclusion	☐ To be checked during next periodic verification ☒ Appropriate action was taken ☐ MR was corrected correspondingly ☐ Appropriate action was not taken ☒ The project complies with the requirements			

Monitoring Report	**CR R6- SHP**			
Classification	☐ CAR	☐ FAR	☒ CR	☐ None
Findings	**The location of the electricity meters** The location of the electricity meters should be indicated in the monitoring reports for the Hydro Projects.			
Corrective Action	The point of metering is determined by the owner of the transfer system according to act 458/2000 (The Energy Act). All of the small hydro projects are located at sites that were once operated by electric utilities and with existing substations that will be the point of sale at or very near to the project location. As this is the case for all 15 small hydros, production ex-plant and sales are identical since there are no losses between the production point and the point of sale. Therefore, the loss factor in line 23 is entered as 1.00 so monthly production and sales are identical.			

Monitoring Report	**CR R6- SHP**
Additional comment	This issue has been appropriately clarified and deemed to be reasonable and appropriate. Furthermore the location of the meters has been inspected during the on-site-visits and it has been verified that the location of the meters is in line with the information provided in the monitoring plan and reports.
Conclusion	☐ To be checked during next periodic verification ☒ Appropriate action was taken ☐ MR was corrected correspondingly ☐ Appropriate action was not taken ☒ The project complies with the requirements

Monitoring Report	**CR R7 – SHP/DH**			
Classification	☐ CAR	☐ FAR	☒ CR	☐ None
Findings	As per the Standardized Monitoring plan the **person who completed** each spreadsheet and the **person who approve**s will be identified each year and this information will be provided with each annual report. Please provide required information for hydro and the district heating projects.			
Corrective Action	The names of the responsible persons have been added to the reports.			
Additional comment	The names of the responsible personal have been accurately and clearly included to the reports.			
Conclusion	☐ To be checked during next periodic verification ☒ Appropriate action was taken ☐ MR was corrected correspondingly ☐ Appropriate action was not taken ☒ The project complies with the requirements			

Monitoring Report	**CR R8 SHP**			
Classification	☐ CAR	☐ FAR	☒ CR	☐ None

Monitoring Report	**CR R8 SHP**
Findings	**1. Key input parameter:** Please include in the Monitoring Report a brief description how the key input data of the Energy Sector of Czech Republic have been obtained, including the information about the data sources especially for: • Energy Balance Data • Grid Forecast • Monthly Generation by fuel • Displacement • Emission factors • Coal plant heat rates • Efficiency of new simple cycle gas turbine **2. AEO report** for Gas efficiency factor should be provided.
Corrective Action	An annex has been added with the sources for all of the above.
Additional comment	The required information has been appropriately included to the monitoring reports. The information has been verified: In many cases the information is publicly available and the corresponding data has been verified by following the links. Furthermore also the corresponding evidences and data sources have been provided to the independent entity and have been verified.
Conclusion	☐ To be checked during next periodic verification ☒ Appropriate action was taken ☐ MR was corrected correspondingly ☐ Appropriate action was not taken ☒ The project complies with the requirements

Monitoring Report	**CR R9 Rozmital**			
Classification	☐ CAR	☐ FAR	☒ CR	☐ None
Findings	Heat of combustion (by account) has been included in the spreadsheets to calculate Energy content natural gas. This parameter is not defined in the monitoring plan. Please clarify on this matter. In case of the deviation/revision of the Monitoring plan, please explain the reasons for deviation and the conservative nature of the deviation/revision. Please also explain the conversion method. (in particular division by 1,11 is unclear)			

Monitoring Report	**CR R9 Rozmital**
Corrective Action	This has been revised using the default value of the Monitoring Plan and emission reductions for 2006 and 2007 have been revised in the monitoring workbooks and monitoring reports.
Additional comment	The default value as per the Monitoring Plan has been applied. The emission reductions for 2006 and 2007 have been revised in the monitoring workbooks and monitoring reports. The calculation is in line with approved monitoring plan. (As the difference was of a minor size the revised values do not significantly differ from the previous.)
Conclusion	☐ To be checked during next periodic verification ☒ Appropriate action was taken ☐ MR was corrected correspondingly ☐ Appropriate action was not taken ☒ The project complies with the requirements

Monitoring Report	**CR R10 SHP**			
Classification	☐ CAR	☐ FAR	☒ CR	☐ None
Findings	**Monitoring** Please include in the Monitoring report the information about how the operational and monitoring obligations of the small hydro projects as per the monitoring plan have been addressed / followed? In particular please include following information: • Please specify the measurement methods and procedures (Where this data has been taken from?) • Which measurement **equipment** is used? • **How** the measurement is **undertaken**? • Which **calibration** procedures are applied? • What is the **accuracy** of the measurement method, • Who is the **responsible person** / entity that should undertake the measurements and • What is the measurement **interval**. • How the QA/QC procedures (if any) are applied.			
Corrective Action	Decree number 218/2001 provides details on electricity metering and submission of technical data including the type of measurement, method of measurement, calibration procedures, intervals, and other information mentioned above. The document is available in Czech. http://www.tzb-info.cz/t.py?t=15&i=177			

Monitoring Report	**CR R10 SHP**
Additional comment	Decree number 218/2001 regulates the electricity metering, including the provisions for appropriate metering equipment, accuracy class and calibration procedures. As in detail explained in Annex 1 of this report metering equipment installed at the project sites and the monitoring provisions follows provisions as stipulated by the national regulations and in the monitoring plan. This has been verified in the course of the determination. The responsibilities as well as the quality assurance procedures have been appropriately defined and included in the monitoring reports.
Conclusion	☐ To be checked during next periodic verification ☒ Appropriate action was taken ☐ MR was corrected correspondingly ☐ Appropriate action was not taken ☒ The project complies with the requirements

Monitoring Report	**CR R11 Rozmital**			
Classification	☐ CAR	☐ FAR	☒ CR	☐ None
Findings	**Monitoring** Please include in the Monitoring report the information about how the operational and monitoring obligations within the Rozmital project as per the monitoring plan have been addressed / followed? In particular please include the following information: • Please specify the measurement methods and procedures (Where this data has been taken from?) • Which measurement **equipment** is used? • **How** the measurement is **undertaken**? • Which **calibration** procedures are applied? • What is the **accuracy** of the measurement method, • Who is the **responsible person** / entity that should undertake the measurements and • What is the measurement **interval**. • How the QA/QC procedures (if any) are applied.			
Corrective Action	Decree number 458/2000 (Energy Act) provides details on heat metering and submission of technical data including the type of measurement, method of measurement, calibration procedures, intervals, and other information mentioned above. The document is available in Czech. http://www.tzb-info.cz/t.py?t=15&i=166			

Monitoring Report	**CR R11 Rozmital**
Additional comment	Decree number 458/2000 regulates the metering of heat generation, including the provisions for appropriate metering equipment, accuracy class and calibration procedures. As in detail explained in Annex 1 of this report metering equipment installed at the project sites and the monitoring provisions follows provisions as stipulated by the national regulations and in the monitoring plan. This has been verified in the course of the determination. The responsibilities as well as the quality assurance procedures have been appropriately defined and included in the monitoring reports.
Conclusion	☐ To be checked during next periodic verification ☒ Appropriate action was taken ☐ MR was corrected correspondingly ☐ Appropriate action was not taken ☒ The project complies with the requirements

Monitoring Report	**CAR R12 Decin**			
Classification	☒ CAR	☐ FAR	☐ CR	☐ None
Findings	**Monitoring** Please include in the Monitoring report the information about how the operational and monitoring obligations within the Decin project as per the monitoring plan have been addressed / followed? In particular please include the following information: • Please specify the measurement methods and procedures (Where this data has been taken from?) • Which measurement **equipment** is used? • **How** the measurement is **undertaken**? • Which **calibration** procedures are applied? • What is the **accuracy** of the measurement method, • Who is the **responsible person** / entity that should undertake the measurements and • What is the measurement **interval**. • How the QA/QC procedures (if any) are applied.			
Corrective Action	Decree number 458/2000 (Energy Act) provides details on heat metering and submission of technical data including the type of measurement, method of measurement, calibration procedures, intervals, and other information mentioned above. The document is available in Czech. http://www.tzb-info.cz/t.py?t=15&i=166			

Monitoring Report	**CAR R12 Decin**
Additional comment	Decree number 458/2000 regulates the metering of heat generation, including the provisions for appropriate metering equipment, accuracy class and calibration procedures. As in detail explained in Annex 1 of this report metering equipment installed at the project sites and the monitoring provisions follows provisions as stipulated by the national regulations and in the monitoring plan. This has been verified in the course of the determination. The responsibilities as well as the quality assurance procedures have been appropriately defined and included in the monitoring reports.
Conclusion	☐ To be checked during next periodic verification ☒ Appropriate action was taken ☐ MR was corrected correspondingly ☐ Appropriate action was not taken ☒ The project complies with the requirements

Calculation	**CAR C1**			
Classification	☒ CAR	☐ FAR	☐ CR	☐ None
Findings	**Calculation (Benatky) inaccurate:** In the Excel file "Emissions" (Benatky) please correct the inaccurate formula**e** in the in table "Grid Forecast",			
Corrective Action	Cells P12, P40, P42, P43, and P47 have been corrected and the ER total for the subproject has been updated.			
Additional comment	The calculation of emission reductions for Benatky small hydro plant has been appropriately corrected and the revised Excel file has been provided.			
Conclusion	☐ To be checked during next periodic verification ☒ Appropriate action was taken ☐ MR was corrected correspondingly ☐ Appropriate action was not taken ☒ The project complies with the requirements			

Calculation	**CR C2**			
Classification	☐ CAR	☐ FAR	☒ CR	☐ None
Findings	Please include a justification for the assumed number of marginal hours in the table "2002 High Load Hours" for 846 hours (2006) and (725 hours (2007).			
Corrective Action	The Czech hourly load shape has not changed much in recent years and is not expected to change dramatically in the near future. Therefore, the baseline study suggests that the 2002 data can be used without significant error as long as total domestic gross consumption does not exceed 2002 levels by more than 25%. Even if this condition is violated, the availability of hourly load data in the future is not certain. In the absence of new hourly data the 2002 data can continue to be used for this purpose.			
Additional comment	The justification provided for the assumed number of marginal hours is reasonable and in line with the approved monitoring plan. Hence the clarification request has been closed.			
Conclusion	☐ To be checked during next periodic verification ☒ Appropriate action was taken ☐ MR was corrected correspondingly ☐ Appropriate action was not taken ☒ The project complies with the requirements			

5. SUMMARY OF VERIFICATION ASSESSMENTS

The following paragraphs include the summary of the final verification assessments after all CARs and CRs are closed out. For details of the assessments pl. refer to the discussion of the verification findings in chapter 4 and the verification protocol (Annex 1).

5.1. Implementation of the project

During the verification a site visit was carried out. On the basis of this site visit and the reviewed project documentation it can be confirmed that w.r.t. the realized technology, the project equipments, as well as the monitoring and metering equipment, the project has been implemented and operated as described in the validated project design documents, monitoring plans and the relevant baseline studies.

5.2. Project history

In the course of the first verification two Forward Action Requests have been raised in order to request the project participant to improve its data management system as well to establish a quality assurance system to ensure high quality project management of all sub-projects.

In order to comply with these requirements project participant has improved the procedures for data management and processing within the particular stages of the monitoring. Double check procedures have been introduced to ensure high quality project management of all sub-projects. Different tasks within the monitoring are clearly allocated to the personnel of the different departments of the Ministry of Industry and Trade. The personnel and the corresponding tasks/responsibilities of the project monitoring are clearly defined. Furthermore all procedures have been clearly documented.

A sufficient confidence has been gained that the introduced two stage quality assurance system provides procedures and provisions for an accurate and appropriate monitoring of generated emission reductions.

5.3. Special events

All rights and obligations previously under the responsibility of the Czech Energy Agency (CEA) were transferred to the Czech Ministry of Industry and Trade, effective from January 1, 2008.

No further special events with effect on the monitoring of the project have been observed during the monitoring period.

5.4. Compliance with the monitoring plan

The monitoring system and all applied procedures have been reviewed. It has been verified that the monitoring system and all applied procedures are completely in compliance to the validated monitoring plan. The CARs and CRs raised in this context have been successfully closed.

The validated monitoring plan specifies procedures for data collecting and reporting. These procedures have been appropriately followed by the project participant within the monitoring. In particular it has been verified that appropriate measurement equipment has been used. Also the collection and recording of the monitoring parameters has been duly carried out by the responsible personnel.

Furthermore the monitoring plan provides an Excel calculation spreadsheet. The completing of the spreadsheet is an integral part of the monitoring. This has been appropriately carried out by the responsible personnel.

No deviations from the validated monitoring plan have been identified.

5.5. Compliance with the monitoring methodology

The project activity applies a project specific methodology.

The monitoring plan provides an Excel calculation spreadsheet. This spreadsheet contains defined and validated formulae for calculation of emission reductions. In addition the monitoring plan provides an explanation and guidance on the application of the developed calculation tool.

the verification team has reproduced the calculation of emission reductions based on the provided parameters and the amount of the emission reduction has been verified. The applied spreadsheet have been also reviewed and examined. It has been verified that the formulae and procedures as defined within the monitoring plan has been appropriately applied. No changes and deviations to the approved spreadsheet have been observed. Nevertheless a CAR C1 has been raised because in Excel file "Emissions" (Benatky) inaccurate formulae in the in table "Grid Forecast" have been observed. The corresponding formulae have been corrected. the verification team has proved the updated calculations and the CAR C1 has been closed.

No further significant deviations from the validated monitoring plan that might have an impact on the amount of emission reductions have been identified.

5.6. Monitoring parameters

During the verification all relevant monitoring parameters have been verified with regard to the appropriateness of the applied measurement / determination method, the correctness of the values applied for ER calculation, the accuracy, and applied QA/QC measures. The results as well as the verification procedure are described in the project specific verification checklist.

After appropriate corrections were carried out by the project participant it can be confirmed that all monitoring parameters have been measured / determined without material misstatements and in line with all applicable standards and relevant requirements.

5.7. Monitoring report

A draft monitoring report was submitted to the verification team by the project participants.

During the verification, mistakes and needs for clarification were identified. The PP has carried out the requested corrections so that it can be confirmed that the Monitoring report is complete and transparent and in accordance with the registered PDD and other relevant requirements.

5.8. ER Calculation

During the verification mistakes in the ER calculation were identified. Corresponding CARs were raised. In particular CAR C1 has been raised because in the Excel file "Emissions" (Benatky) inaccurate formulae in the in table "Grid Forecast" have been observed.

A revised ER calculation was prepared by the PP and presented to the verification team. All raised issues were addressed appropriately so that all CAR C1 could be closed out. Thus it is confirmed that the ER calculation is overall correct.

5.9. Quality Management

Quality Management procedures for measurements, collection and compilation of data, data storage and archiving, calibration, maintenance and training of personnel in the framework of this CDM project activity have been defined. The procedures defined can be assessed as appropriate for the purpose. No significant deviations thereof have been observed during the verification.

Please also refer to the comment made within the assessment of the improved system for data management undertaken in response on the FARs raised within the previous verification.

5.10. Overall Aspects of the Verification

All necessary and requested documentation was provided by the project participants so that a complete verification of all relevant issues could be carried out.

Access was granted to all installations of the plant which are relevant for the project performance and the monitoring activities.

No issues have been identified indicating that the implementation of the project activity and the steps to claim emission reductions are not compliant with the applicable UNFCCC criteria and relevant guidance provided by the COP/CMP and the JISC (clarifications and/or guidance).

5.11. Hints for next Periodic Verification

No FARs have been raised.

6. VERIFICATION OPINION

The World Bank (Prototype Carbon Fund) has commissioned the TÜV NORD JI/CDM Certification Program to carry out the 3rd periodic verification of the project: "CZECH UMBRELLA JI PROJECTS", with regard to the relevant requirements for JI project activities. The umbrella of projects can be divided in two groups: District heating (DH) and Small Hydro Projects (SHD). Within the district heating group the emission reduction is realized by a fuel switch from coal to gas. Within the small hydro projects the emission reduction is achieved by the renewable production of electricity which is fed into the national grid.

This verification covers the period:

District Heating Projects: 01.04.2006 – 31.12.2007

Small Hydro Projects: 01.01.2006 – 31.12.2007

In the course of the verification 7 Corrective Action Requests (CAR) and 11 Clarification Requests (CR) were raised and successfully closed. No FARs have been raised to improve the monitoring system in the future. The verification is based on the draft monitoring report, revised monitoring report, the validated monitoring plan, the 1st verification report, emission reduction calculation spreadsheet and supporting documents made available to the TÜV NORD JI/CDM CP by the project participant.

As a result of this verification, the verifier confirms that:

- all operations of the project are implemented and installed as planned and described in the validated project design document.
- the monitoring plan is in accordance with the validated project specific monitoring plan developed for DH and SHD project activities.
- the installed equipment essential for measuring parameters required for calculating emission reductions are calibrated appropriately.
- the monitoring system is in place and functional. The project has generated GHG emission reductions.

As the result of the 3rd periodic verification, the verifier confirms that the GHG emission reductions are calculated without material misstatements in a conservative and appropriate manner. TÜV NORD JI/CDM CP herewith confirms that the project has achieved emission reductions in the above mentioned reporting period as follows:

Sub-project	**Time period**	**Amount in CO_{2e}**
Rozmital and Decin	01.04.2006 – 31.12.2006	11,796 t CO_{2e}
Rozmital and Decin	01.01.2007 – 31.12.2007	20,284 t CO_{2e}
Small Hydro Projects	01.01.2006 – 31.12.2006	31,575 t CO_{2e}
Small Hydro Projects	01.01.2007 – 31.12.2007	39,466 t CO_{2e}
Total amount of emission reductions:		**103,121 t CO_{2e}**

Essen 2009-05-12

Rainer Winter

TÜV NORD JI/CDM Certification Program

Verification Team Leader

Essen, 2009-05-12

Eric Krupp

TÜV NORD JI/CDM Certification Program

Final Approver

7. REFERENCES

Table 7-1: Documents provided by the project participant(s)

Reference	Document
/**D-1**/	"Yearly Report (2007) from the Energy regulation agency (ERU)"
/**D-2**/	Report of CO2 reduction. (Decin)
/**D-3**/	Excel sheets with Gas Consumption by HOBS in TCM, (Decin)
/**D-4**/	Electric Consumption by Heat Pumps in MWh,
/**D-5**/	Total Electric Consumption for Heat Production and Delivery to the DN Network, (Decin)
/**D-6**/	Electric Production by Gas Motors Ex Plant in MWh, Heat Production by Gas Motors Ex Plant in TJ, (Decin)
/**D-7**/	Heat Production by HOBs Ex Plant in TJ, (Decin)
/**D-8**/	Total Heat Delivered to District Heat Network, (Decin)
/**D-9**/	Total Gas Consumption in MWh, Heat Delivered to Grid, (Decin)
/**D-10**/	Total Heat sales, Efficiency district heating system, (Rozmital)
/**D-11**/	Numbers of customers (Rozmital)
/**D-12**/	Numbers of heat flow meters (Rozmital)
/**D-13**/	Heat sales in GJ (new flats, Municipal school, District heating consumers) (Rozmital)
/**D-14**/	Energy input natural gas (Rozmital)
/**D-15**/	Electricity consumption (Rozmital)
/**D-16**/	Heat ex plant (Rozmital)
/**D-17**/	Monthly generation SHP

Reference	Document
/**D-18**/	Energy Balance
/**D-19**/	CEZ annual report
/**D-20**/	Displacement and Efficiency of the new simple cycle gas turbine:
/**D-21**/	Emission factors
/**BA-7**/	Emissions Reduction Report (for DH Decin & Rozmital) 4th Monitoring period April 1st, 2004 – December 31st 2006
/**BA-8**/	Emissions Reduction Report (for DH Decin & Rozmital) 5th Monitoring period January 1st, 2007 – December 31st 2007
/**BA-9**/	Emissions Reduction Report, 4th Monitoring period SHP January 1st, 2006 – December 31st, 2006
/**BA-10**/	Emissions Reduction Report, 2007 Payment SHPs January 1st, 2007 – December 31st, 2007
/**MR**/	MS-Excel calculation and monitoring files:

Table 7-2: Background investigation and assessment documents

Reference	Document
/**BA-1**/	Czech District Heating Projects Proposed Standard Baseline Final Report, published by PCF and performed by Power System Engineering Inc. dated Dec. 9th , 2002
/**BA-2**/	Decin District Heating Project Baseline Study Final Report, published by PCF and performed by Power System Engineering Inc. dated Aug. 21st , 2003
/**BA-3**/	The Prototype Carbon Fund monitoring Plan (MP) Decin District Heating Project, published by PCF dated Aug. 21st , 2003
/**BA-4**/	Rozmital District Heating Project Baseline Study Final Report, published by PCF and performed by Power System Engineering Inc. on Dec. 16th , 2002
/**BA-5**/	The Prototype Carbon Fund Monitoring Plan (MP) Rozmital District Heating Project, published by PCF on May. 14th , 2002

Reference	Document
/**BA-11**/	Verification Report, Report No. 645780, Version 01, 28 November 2006, TÜV SÜD The World Bank Prototype Carbon Fund Umbrella of Climate Change Projects in the Czech Republic for the following time period: Period of District Heating Projects: 01/04/2004 – 31/03/2006 Period of Small Hydro Bundle-1: 01/04/2002 – 31/12/2004 Period of Small Hydro Bundle-2: 01/03/2003 – 31/12/2005
/**CPM**/	TÜV NORD JI / CDM CP Manual (incl. CP procedures and forms)
/**IPPC**/	1. 1996 IPCC Guidelines for National Greenhouse Gas Inventories: work book 2. 2006 IPCC Guidelines for National Greenhouse Gas Inventories: work book
/**KP**/	Kyoto Protocol (1997)
/**MA**/	Decision 3/CMP. 1 (Marrakesh – Accords)
/**VVM**/	UNFCCC Validation and Verification Manual (Version as per EB 44)

Table 7-3: Websites used

Reference	Link	Organisation
/**dna-HP**/	http://www.mzp.cz/AIS/web-en.nsf/pages/Climate_Change	DNA of Czech Republic
/**dna-pr**/	http://www.env.cz/AIS/web-pub.nsf/$pid/MZPPZFEQYNJ6/$FILE/Methodical%20Guidelines_EN.doc	Methodical Guideline for Submitting and Approving Joint Implementation Projects in the Czech Republic
/**unfccc**/	http://cdm.unfccc.int	UNFCCC
/**ipcc**/	www.ipcc-nggip.iges.or.jp	IPCC publications

Table 7-4: Interviewed Persons

Reference		Name	Organisation / Function
/**IM01**/	☒ Mr. ☐ Ms	Pavel Gebauer	Head of Renewable Energy Department Ministry of Industry and Trade
/**IM01**/	☒ Mr. ☐ Ms	Jana Plecha	Advisor to the Deputy Minister Ministry of Industry and Trade
/**IM01**/	☒ Mr. ☐ Ms	Ryszad Malarski	Development Operations, The Worldbank Office in Warsaw
/**IM01**/	☒ Mr. ☐ Ms.	Milan Matušovič	Týnec nad Sázavou – Brodce –MVE / Owner/Manager
/**IM01**/	☒ Mr. ☐ Ms.	Václav Mandák	Františkov- Šumava – MVE / Manager
/**IM01**/	☒ Mr. ☐ Ms.	Josef Kindl	Koštice nad Ohří – MVE / Manager
/**IM01**/	☒ Mr. ☐ Ms.	Ing. Miroslav Brada	Černýš – Pernštejn nad Ohří – MVE / Manager
/**IM01**/	☒ Mr. ☐ Ms.	Ing. Jiří Langer	Horky nad Jizerou –MVE / Owner/Manager
/**IM01**/	☒ Mr. ☐ Ms.	Dr. Luděk Liška	Benátky nad Jizerou – MVE / Owner/Manager
/**IM01**/	☒ Mr. ☐ Ms.	Ing. Miroslav Křivánek	Pátek – MVE / Manager
/**IM01**/	☒ Mr. ☐ Ms.	Ing. Michal Vyšín	Děčín – Staré město –MVE / Owner
/**IM01**/	☒ Mr. ☐ Ms.	Ing. Miroslav Křivánek	Libochovice – MVE / Owner
/**IM01**/	☒ Mr. ☐ Ms.	Zbynek Mrozek	Olše - MVE / Manager
/**IM01**/	☒ Mr. ☐ Ms.	Ing. Herbert Gärtner	Smržovka – Kamenice – MVE / Manager
/**IM01**/	☒ Mr. ☐ Ms.	Pavel Dohnal	Čerčany – MVE / Manager
/**IM01**/	☒ Mr.	Zdeněk Řehoř	Libočany – MVE / Manager

Reference		Name	Organisation / Function
	☐ Ms.	Ing. Jakub Helus	Libočany – MVE / Manager
/**IM01**/	☒ Mr. ☐ Ms.	Šlichta Ing. Jakub Helus	Bulhary – MVE/ Technician Bulhary – MVE/ Manager
/**IM01**/	☒ Mr. ☐ Ms.	Petr Tremer	Les Království – MVE / Manager
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ANNEX

Verification Protocol

ANNEX: VERIFICATION PROTOCOL

Table A-1: GHG calculation procedures and management control testing / detailed audit testing of residual risk areas and random testing

Identification of potential reporting risk	Identification, assessment and testing of management controls	Areas of residual risks	Additional verification testing	Conclusions and Areas Requiring Improvement (including *Forward Action Requests*)
Raw data generation				
• Installation of measuring equipment • Dysfunction of installed equipment • Maloperation by operational personnel • Downtimes of equipment • Exchange of equipment • Change of measurement equipment characteristic • Insufficient accuracy • Change of	• Installation of modern and state of the art equipment • Process control automation. • Internal data review • Regular visual inspect-ions of installed equip-ment • Only skilled and trained personnel operates the relevant equipment • Daily raw data checks • Immediate exchange of dysfunctional equipment • Stand-by duty is	• Inadequate installation / operation of the monitoring equipment. • Inadequate exchange of equipment. • Change of personnel • Undetected measurement errors • Inappropriateness of Management system procedures w.r.t. monitoring plan requirements (e.g. substitute value strategies) • Non-application of management system procedures • Insufficient accuracy	• Site – visit • Check of equipment • Check of technical data sheets • Check of suppliers information / guarantees. • Check of calibration records, if applicable • Check of maintenance records • Export and countercheck of raw data in EXCEL. • Counter-check of raw data and commercial	• **See Table A-2**

Identification of potential reporting risk	Identification, assessment and testing of management controls	Areas of residual risks	Additional verification testing	Conclusions and Areas Requiring Improvement (including *Forward Action Requests*)
technology • Accuracy of values supplied by Third Parties	organized • Training • Internal audit procedures • Internal check of QA/QC measures of involved Third Parties	• Inappropriate QA/QC measures of Third Parties	data • Check of JI management system • Check of JI related procedures • Application of CDM management system procedures • Check of trainings • Check of responsibilities • Check of QA/QC documentation / evidences of involved Third Parties	
Raw data collection and data aggregation				
• Wrong data transfer from raw data to daily and monthly aggregated reporting forms • IT Systems • Spread sheet	• Cross-check of data • Plausibility checks of various parameters. • Appropriate archiving system • Clear allocation of responsibilities	• Unintended usage of old data that has been revised • Incomplete documentation • Ex-post corrections of records • Ambiguous sources of information	• Check of data aggregation steps • Counter-calculation • Data integrity checks by means of graphical data analysis and calculation of specific performance	• **See Table A-2**

Identification of potential reporting risk	Identification, assessment and testing of management controls	Areas of residual risks	Additional verification testing	Conclusions and Areas Requiring Improvement (including *Forward Action Requests*)
programming • Manual data transmission • Data protection • Responsibilities	• Application of JI Management system procedures • Usage of standard software solutions (Spreadsheets) • Limited access to IT systems • Data protection procedures	• Non-application of management system procedures • Manual data transfer mistakes • Unintended change of spread sheet programming or data base entries • Problems caused by updating/upgrading or change of applied software	figures • Check of data archiving system • Check of application of Management system procedures	
Other calculation parameters				
• Emission factors, oxidation factors, coefficients	• The values and data sources applied are defined in the PDD and monitoring plan.	• Unintended or intended Modification of calculation parameters. • Wrong application of values • Misinterpretations of the applied methodology and/ or the PDD • Missing update of applicable regulatory framework (e.g. IPCC	• Update-check of regulatory framework • Countercheck of the applied MP in the MR against the methodology and the PDD.	• **See Table A-2**

Identification of potential reporting risk	Identification, assessment and testing of management controls	Areas of residual risks	Additional verification testing	Conclusions and Areas Requiring Improvement (including *Forward Action Requests*)
		values).		
Calculation Methods				
• Applied formulae • Miscalculation • Mistakes in spread-sheet calculation	• Advanced calculation and reporting tools • A JI coordinator is in charge of the JI related calculations • Usage of tested / counterchecked Excel spreadsheets • Involvement of external consultants	• The danger of miscal-culation can only be minimized.	• Countercheck on the basis of own calculation. • Spread sheet walk-trough. • Plausibility checks • Check of plots	• **See Table A-2**
Monitoring reporting				
• Data transfer to the author of the monitoring report • Data transfer to the monitoring report • Unintended use of	• An experienced JI consultant is responsible for monitoring reporting. • JI QMS procedures are defined	• The danger of data transfer mistakes can only be minimized • Inappropriate application of QMS procedures	• Counter check with evidences provided. • Audit of procedure application	• **See Table A-2**

Identification of potential reporting risk	Identification, assessment and testing of management controls	Areas of residual risks	Additional verification testing	Conclusions and Areas Requiring Improvement (including *Forward Action Requests*)
outdated versions				

Table A-2: (Project specific) Periodic Verfication Checklist

Checklist Item (incl. guidance for the verification team)	**Refe-rence**	**Verifiers Comments** (Means and results of assessment)	**Draft Concl.**	**Final Concl.**
1. Project history				
Open issues from validation *Check (esp. in case of 1st periodic verification) whether there are any open issues indicated in the validation report (e.g. FAR)?*	/VAL/	This is a second periodic verification. No open issues from the validation should be addressed.	OK	OK
Open issues from previous verification *Check in case of further periodic verifications whether there are any open issues indicated in previous verification (FAR)?*	/BA-11/	This is a second periodic verification. Two FARs have been raised in the course of the pervious verification. CAR H1 has been raised because more detailed information should be provided in the Monitoring Reports about the actions taken in response to the FARs raised within the last verification. The requested actions have been carried out and the information has been added in the monitoring reports. For the details please refer to the assessment under CAR H1.	~~CAR H1~~	OK
Requests for Deviations / Revisions of MP *Check if there have been any requests for deviations from the registered monitoring plan or requests for revisions of the monitoring plan. If any, make sure that they are considered during verification?*	/unfccc/	The project related documentation was checked. No RfDev or RfrevMP have been raised before the start of the verification.	OK	OK
Initial verification *In case an initial verification has been carried out, check if all FARs, recommendations etc. have been addressed appropriately.*	/IM01/ /BA-11/	N/A	OK	OK

Checklist Item (incl. guidance for the verification team)	**Refe-rence**	**Verifiers Comments** (Means and results of assessment)	**Draft Concl.**	**Final Concl.**
Initial project implementation *In case of first periodic verification: Assess whether the project has been implemented and operated as per the registered PDD and are all physical features of the project in place?* *In case of further periodic verifications: Go to next chapter.*	/BA-11/	N/A	OK	OK
2. Update on Changes and Incidents (during the Monitoring Period)				
Technical equipment *Check if relevant technical equipment of the project activity has been exchanged or modified during the monitoring period.* *Consider e.g. interviews with operational personnel, QMS records, maintenance records, instrument specifications.* *In case of changes, check whether the project is still in line with the registered PDD and assure that these changes have been considered in the monitoring report and the emission reduction calculation.*	/IM01/ /BA-1/ /BA-2/ /BA-3/ /BA-4/	In the course of the verification the verification team has inspected the project sites and interviewed the operational personnel. By means of instrument specifications and during the audit it was evidenced, that no relevant equipment was exchanged within the monitoring period. The regular service on small co-generation unit (every 30,000 hours) during October and November 2007, production was realized only on boiler.	OK	OK
Operation modes *Check if relevant operation modes of the project activity have been exchanged or modified during the monitoring period.* *Consider e.g. interviews with operational personnel,*	/IM01/ /BA-1/ /BA-2/ /BA-3/	By means of interviews with the operational personnel it was evidenced, that no relevant operation modes were exchanged within the monitoring period.	OK	OK

Checklist Item (incl. guidance for the verification team)	**Refe-rence**	**Verifiers Comments** (Means and results of assessment)	**Draft Concl.**	**Final Concl.**
operation log sheets, data management system records. *In case of changes, check whether the project is still in line with the registered PDD and assure that these changes have been considered in the monitoring report and the emission reduction calculation.*	/BA-4/			
Incidents *Identify if there have been any significant incidents, deviant operation modes and / or downtimes of the equipment?* *Consider e.g. interviews with operational personnel, operational log sheets, analysis of performance data.*	/IM01/ /BA-8/	It was verified during the site visit that no significant incidents have occurred during the monitoring period. This was also backed up by the data integrity check. A decrease of the gas consumption and the electric production by Gas Motors Ex Plant in MW as well as the heat production by Gas Motors Ex Plant in October and November 2007 has been observed. CR U3 has been raised under this context. As per the response of PP the regular service on small co-generation unit (every 30,000 hours) during October and November 2007, production was realized only on boiler.	~~CR U3~~	OK
Personnel *Find out, if relevant personnel w.r.t. monitoring has been exchanged?* *In case of changes, assure that the implemented monitoring procedures have not been affected.*	/IM01/ /BA-7/ /BA-8/ /BA-9/ /BA-10/	In this context it is important to mention that all rights and obligations previously under the responsibility of the Czech Energy Agency (CEA) were assumed by the Czech Ministry of Industry and Trade, effective January 1, 2008. Hence Ministry of Industry and Trade has been appropriately indicated as a project participant within the monitoring reports covering the time period between 01.01.2007 – 31.12.2007. In general the responsibilities of the personnel within the	~~CR R7~~	OK

Checklist Item (incl. guidance for the verification team)	**Refe-rence**	**Verifiers Comments** (Means and results of assessment)	**Draft Concl.**	**Final Concl.**
		monitoring of the project activity are clearly defined. All tasks have been carried out by properly trained personnel. CR R7 has been raised under this context. The requested information has been appropriately provided and the CR has been closed.		
Legislation Find out whether relevant legislation with effect on the project activity in the host country has been changed.	/dna-pr/ /IM01/ /BA-7/ /BA-8/ /BA-9/ /BA-10/ /BA-11/	Relevant legislation was considered, No relevant changes were identified.	OK	OK
3. Monitoring Report – General				
Monitoring period *Check if the monitoring period is in line with a) the crediting period and/or b) previous monitoring periods?*	/unfccc/ /BA-7/ /BA-8/ /BA-9/ /BA-10/ /BA-11/	There is an overlapping of crediting periods: The first verified crediting period for DH projects was for the time period between 01/04/2004 and 31/03/2006. The monitoring report for the 3rd crediting period starts on 01/01/2006. Hence there is an overlapping of crediting periods. Emission reductions achieved in January, February and March 2006 should be taken out of the Monitoring reports. The overlapping has been eliminated and the CAR R1 has been successfully closed. For details please refer to CAR R1	~~CAR R1~~	OK

Checklist Item (incl. guidance for the verification team)	**Refe-rence**	**Verifiers Comments** (Means and results of assessment)	**Draft Concl.**	**Final Concl.**
References *Check if the monitoring report provides the correct references, in detail: project title, applied methodology/ies, meth tools.*	/BA-7/ /BA-8/ /BA-9/ /BA-10/	Page numbers, the date of issuance and revision number should be indicated in the Monitoring reports for the district heating and small hydro projects. CAR R2 was raised in this context. In response to the raised CAR R2 PP has appropriately included the date of issuance and revision number of the monitoring report as well as the page numbers.	~~CAR R2~~	OK
Completeness *Assess if the monitoring report is complete, i.e. have all relevant issues been addressed?*	/BA-7/ /BA-8/ /BA-9/ /BA-10/	The location of the electricity meters should be provided indicated in the monitoring reports for Hydro Projects. CR R2 was raised in this context As per the Standardized Monitoring plan the person who completed the each spreadsheet and the person who approves will be identified each year and this information will be provided with each annual report. CR R3 was raised in this context	CR R2 CR R3	OK
Transparency *Assess if the monitoring report is transparent, i.e. clear and unequivocal in all respect?*	/BA-7/ /BA-8/ /BA-9/ /BA-10/	The monitoring reports include an accurate and clear description of the project activity, a short month wise data on the main monitoring parameters like the electricity/heat generation and fossil fuel consumption. Furthermore the monitoring reports clearly indicate the generated amount of emission reductions. All the information is provided in very transparently in the table format. Nevertheless a description how the key input data on the Energy Sector of Czech Republic have been obtained should be included in the Monitoring Report. CR R8 was raised in this context	CR R8 CAR R5	OK

Checklist Item (incl. guidance for the verification team)	**Refe-rence**	**Verifiers Comments** (Means and results of assessment)	**Draft Concl.**	**Final Concl.**
		Electricity generation by each side should be provided in Table form in the Monitoring report. CAR R4 was raised in this context. CAR R5 and CR R8 have been successfully closed. For details please refer to CAR R5 and CR R8.		
Misstatements on general issues *Assess whether the monitoring report is free of material misstatements regarding issues other than the monitoring parameters.* *Discuss the monitoring parameters in detail in chapter "Monitoring Parameters".*	/BA-7/ /BA-8/ /BA-9/ /BA-10/	The following issues have been identified: •		OK
		• Capacity of the turbines for Horky, Decin, Libochovice, Tynec nad Sazavao – Brodce as indicated in the Monitoring Report for the small hydro projects deviate from that indicated in the corresponding Baseline studies and Monitoring plans. CR U2 was raised in this context and successfully closed. For details please refer to the assessment of the corresponding finding.	CR U2	
		• Decision of the Czech Minister of Industry and Trade No.238/2007 should be corrected. CAR R4 was raised in this context and successfully closed. For details please refer to the assessment of the corresponding finding.	CAR R4	
		• The reason why the number of the district heating consumers has been changed from the end 2006 to the beginning 2007 should be provided in the monitoring report. CR U1 has been raised in this context and successfully closed. For details please refer to the assessment of the corresponding finding.	CR U1	
		• CR U2 has been raised because The difference between the indicated capacity of the new gas-fired boilers in the	CR U2	

Checklist Item (incl. guidance for the verification team)	**Refe-rence**	**Verifiers Comments** (Means and results of assessment)	**Draft Concl.**	**Final Concl.**
		Monitoring plan (3,1MW) and the spreadsheets (2,1MW) was unclear. CR U2 has been successfully closed. For details please refer to the assessment of the corresponding finding.		
		• CR R3 has been raised because the capacity of the turbines for Horky, Decin, Libochovice, Tynec nad Sazavao – Brodce as indicated in the Monitoring Report for the small hydro projects deviate from that indicated in the corresponding Baseline studies and Monitoring plans. The raised CR R3 has been successfully closed. For details please refer to the assessment of the corresponding finding.	CR R3	
		• CR R6 has been raised because the location of the electricity meters was not provided indicated in the monitoring reports for Hydro Projects. CR R6 has been successfully closed. For details please refer to the assessment of the corresponding finding.	CR R6	
Deviations from the validated monitoring plan *Assess whether the MR in line with the validated monitoring plan?*	/MR/ /BA-1/ /BA-2/ /BA-3/ /BA-4/ /BA-5/ /BA-7/ /BA-8/ /BA-9/	The validated monitoring plan specifies procedures for data collecting and reporting. These procedures have been appropriately followed by the project participant within the monitoring. In particular it has been verified that appropriate measurement equipment has been used. Also the collection and recording of the monitoring parameters has been carried out by the responsible personnel. Furthermore the monitoring plan provides an Excel calculation spreadsheet. The completing of the spreadsheet is an integral part of the monitoring. This has been appropriately carried out by the responsible personnel.	OK	OK

Checklist Item (incl. guidance for the verification team)	**Refe-rence**	**Verifiers Comments** (Means and results of assessment)	**Draft Concl.**	**Final Concl.**
	/BA-10/	Furthermore the monitoring plan specifies the particular data sources to be applied for determination of the carbon emission factor. The specified data sources have been appropriately applied. Detailed information (links and references) about the particular data sources has been accurately indicated in the monitoring reports. As already indicated the appropriateness of the data sources has been proved in the course of the determination. The reporting of the generated emission reductions has been carried out in a clear, transparent and appropriate manner. The monitoring reports include all the relevant information w.r.t. to the parties involved. In this context it is important to mention that all rights and obligations previously under the responsibility of the Czech Energy Agency (CEA) were assumed by the Czech Ministry of Industry and Trade, effective January 1, 2008. Hence Ministry of Industry and Trade has been appropriately indicated as a project participant within the monitoring reports covering the time period between 01.01.2007 – 31.12.2007. No further deviations from the validated monitoring plan have been identified. Furthermore the reporting has been established in a transparent manner with regard to the choice of approaches, assumptions, parameters, data sources and key factors. Hence it has been concluded that the monitoring report is in line with the validated monitoring plan..		

Checklist Item (incl. guidance for the verification team)	**Refe-rence**	**Verifiers Comments** (Means and results of assessment)	**Draft Concl.**	**Final Concl.**
Deviations from the approved methodology *Assess whether the MR in line with the applied monitoring methodology?*	/MR/ /BA-1/ /BA-2/ /BA-3/ /BA-4/ /BA-5/ /BA-7/ /BA-8/ /BA-9/ /BA-10/	The monitoring plan provides an Excel calculation spreadsheet. The spreadsheet contained defined and validated formulae for calculation of emission reductions. In addition the monitoring plan provides an explanation and a guidance on the application of the developed calculation tool. the verification team has reproduced the calculation of emission reductions based on the provided parameters and the amount of the emission reduction has been verified. The applied spreadsheet have been also reviewed and examined. It has been verified that the formulae and procedures as defined within the monitoring plan has been appropriately applied. No changes and deviations to the approved spreadsheet have been observed. Nevertheless a CAR C1 has been raised because in Excel file "Emissions" (Benatky) inaccurate formulae in the in table "Grid Forecast" have been observed. The corresponding formulae have been corrected. the verification team has proved the updated calculations and the CAR C1 has been closed. No further significant deviations from the validated monitoring plan that might have an impact on the amount of emission reduction have been identified. For a minor deviation CR R9 has been raised because heat of combustion (by account) has been included in the spreadsheets to calculate Energy content natural gas. This parameter is not defined in the monitoring plan. A clarification on this issue has been requested. The raised R9 has been successfully closed. For details please	~~CR R9~~ ~~CAR C1~~	OK

Checklist Item (incl. guidance for the verification team)	Refe-rence	Verifiers Comments (Means and results of assessment)	Draft Concl.	Final Concl.
		refer to the assessment of the corresponding finding. No further deviations from the validated monitoring plan have been identified. Hence it has been concluded that the monitoring report is in line with the validated monitoring plan Hence it has been concluded that the applied methodology for determination of the emission reductions is in line with the validated monitoring plan.		
4. Monitoring Parameters *(List all parameters of the PDD chapter B.7.1; pl. copy the 6 lines below for each parameter)*				
Small Hydro Projects				
4.1. Monthly production ex plant				
Measurement / Determination method *Describe how the monitoring parameter was measured / determined.* *Check if relevant equipment has been exchanged and if in cases of failures / downtimes of standard equipment other measurement / determination methods have been used.* *Assess whether the measurement / determination method is in line with the registered monitoring plan*	/BA-1/ /BA-2/ /BA-3/ /BA-4/ /BA-5/ /MP/ /BA-7/	Within the verification the installed monitoring equipment has been inspected at the project sites. It has been observed and verified that the installed equipment is suitable w.r.t. to the measurement of the monitoring parameters and is in line with provisions of the monitoring plan. Furthermore it has been observed that the installed equipment is operated appropriately and the calibration of the relevant meters has been carried out in compliance with national law. The monitoring of the key input parameters is also relevant for economic and for tax reasons.	~~CR R10,~~ ~~CR R11,~~ ~~CR R12~~	OK

Checklist Item (incl. guidance for the verification team)	**Refe-rence**	**Verifiers Comments** (Means and results of assessment)	**Draft Concl.**	**Final Concl.**
of the PDD and the applied methodology.	/BA-8/ /BA-9/ /BA-10/	Furthermore, the electricity meters of the small hydro projects belong to electricity distribution companies who purchase the generated electricity. Therefore monitoring requirements are resulting in high quality monitoring system. It can be also expected that the future operation of the monitoring equipment will comply with high quality requirements. However CR R10, CR R11, CR R12 have been raised the information about how the operational and monitoring obligations of the small hydro projects, the Rozmital and Decin project have been addressed / followed within the monitoring. In response the raised CRs project participant has provided the required information and the relevant CRs have been closed. For details please refer to the assessment of the relevant CRs. Taking this into account the verification team is of the opinion that the relevant parameters have been monitored in accordance with provisions of the monitoring plan, with the national regulations and in a appropriate manner.		
Correctness *Determine whether the value given in the monitoring report is correct.* *In case of mistakes pl. provide details and descriptions of the CARs raised.*	/D-1/ /D-2/ /D-3/ /D-4/ /D-5/ /D-6/ /D-7/	☒ Correct ☐ Not correct Comment: **Hydro Projects** Within the small hydro projects the key monitoring parameter is the generated electricity. In order to verify the correctness of the monitoring parameters the verification team has reviewed the provided project monitoring workbook (in paper form). The monitoring workbook of the relevant projects include the	**OK**	OK

Checklist Item (incl. guidance for the verification team)	**Refe-rence**	**Verifiers Comments** (Means and results of assessment)	**Draft Concl.**	**Final Concl.**
	/D-8/ /D-9/ /D-10/ /D-11/ /D-12/ /D-13/ /D-14/ /D-15/ /D-16/ /D-17/ /D-18/ /D-19/ /D-20/ /D-21/	information about the project title, location, project operator, form completed, current year, measured at, equipment, responsible person, MWh Production Ex Plant (monthly), Delivered to Point of Sale (monthly), Net Grid Production Displaced (monthly). Furthermore the invoices issued by the distribution companies for the purchased electricity have been provided and reviewed by the verification team. The appropriateness and the correctness of the values given in the monitoring reports have been proved. The determination of the grid factor has been carried out based on the information provided by external data sources. As already indicated the relevant information has been provided. It has been verified that the values given in the monitoring reports are in line with the information as per the provided data sources. **District Heating projects** Within the district heating projects (Rozmital and Decin) the key monitoring parameters are the natural gas consumption, the heat supply ex plant and the heat consumption of all customers. The key parameters and further parameters are measured by calibrated meters. Factors for determination of baseline emissions are fixed and validated. For the values given in the monitoring reports project participant has provided evidences. Within the verification the provided evidences for the relevant monitoring parameters have been		

Checklist Item (incl. guidance for the verification team)	**Refe-rence**	**Verifiers Comments** (Means and results of assessment)	**Draft Concl.**	**Final Concl.**
		proved and the correctness has been verified. The values given in the monitoring report and the corresponding Excel sheets are correct.		
QA/QC Procedure *Describe whether all applicable QA/QC procedures are met. Assess further if the calibration and maintenance of the monitoring equipment has been carried out by competent personnel.*	/BA-1/ /BA-2/ /BA-3/ /BA-4/ /BA-5/ /MP/ /BA-7/ /BA-8/ /BA-9/ /BA-10/	**Hydro Projects** As already indicated quality assurance procedures for the electricity generation is in compliance with national regulation. The calibration is carried out by the distribution companies that purchase electricity. This is in line with the monitoring plan. Hence it has been concluded that QA/QC procedures are appropriate. In the course of the first verification two Forward action requests have been raised in order to request the project participant to improve its data management system as well to establish a quality assurance system to ensure high quality project management of all sub-projects. In order to comply with these requirements project participant has improved the procedures for data management and processing within the particular stages of the monitoring. Double check procedures have been introduced to ensure high quality project management of all sub-projects. Different tasks within the monitoring are clearly allocated to the personal of the different departments of the Ministry of Industry and Trade. Personal and the corresponding tasks/responsibilities of the project monitoring are clearly defined. Furthermore all	~~CAR H1~~ ~~CR R10,~~ ~~CR R11,~~ ~~CR R12~~	OK

Checklist Item (incl. guidance for the verification team)	**Refe-rence**	**Verifiers Comments** (Means and results of assessment)	**Draft Concl.**	**Final Concl.**
		procedures have been clearly documented. A sufficient confidence has been gained that the introduced two stage quality assurance system provides procedures and provisions for an accurate and appropriate monitoring of generated emission reductions. **District Heating projects** For the District Heating projects the monitoring of the relevant parameters is carried out by calibrated equipment. The monitoring is carried out by the appointed personnel. The personnel has been appropriately trained for the assigned tasks. It has been also proved that the calibration and maintenance of the monitoring equipment has been carried out by competent personnel.		
Accuracy *In case of measured (or estimated) values, check whether significant inaccuracies occur; in this case, make sure that appropriate discounts have been considered for ER calculation.*	/MP/ /D-1/ /D-2/ /D-3/ /D-4/ /D-5/ /D-6/	The monitoring plan clearly specifies the parameters to be monitored and the relevant monitoring equipment. The national regulation requires an accuracy of +/- 2% for the metering equipment For the DH projects the verification team confirms that the used method follows the validated method considering the real heat production. For the DH projects the key monitored parameters are measured directly i.e. not estimated. Applied default values have been validated by DNV. The calculation of emission factors within the hydro projects is	~~CR C2~~	OK

Checklist Item (incl. guidance for the verification team)	**Refe-rence**	**Verifiers Comments** (Means and results of assessment)	**Draft Concl.**	**Final Concl.**
	/D-7/ /D-8/ /D-9/ /D-10/ /D-11/ /D-12/ /D-13/ /D-14/ /D-15/ /D-16/ /D-17/ /D-18/ /D-19/ /D-20/ /D-21/	based on the data taken from defined data sources. This data applied is as per the corresponding data sources A CR C2 has been raised because the assumed number of marginal hours in the table "2002 High Load Hours" was unclear. In response project participant has provided an appropriate justification and the CR has been closed. In the course of the verification no significant inaccuracies have been identified for the monitoring parameters.		
Verification *Describe how the value was verified. Consider the measurement / determination procedure, accuracies, QA/QC procedures. Consider as well plausibility checks as far as possible. Check if the applied value could be backed up by corresponding evidences.*	/BA-1/ /BA-2/ /BA-3/ /BA-4/ /BA-5/ /MP/ /BA-7/	All monitoring parameters have been evidenced project participant. The verification team has reviewed the provided evidences. It has been verified that the values in the monitoring reports and the corresponding Excel spreadsheets are in line with provided evidences. For the values taken from publicly available data sources the corresponding documents, references (e.g. links) have been provided. The provided evidences have been proved and the applied values have been verified.	OK	OK

Checklist Item (incl. guidance for the verification team)	Refe-rence	Verifiers Comments (Means and results of assessment)	Draft Concl.	Final Concl.
	/BA-8/ /BA-9/ /BA-10/	As already indicated measurement / determination procedure, accuracies, QA/QC procedures have been assessed as appropriate and in line with provisions of the monitoring plan.		
5. ER Calculation				
Traceability *Assess if the calculation is fully traceable. In case of complex calculations an Excel calculation spread-sheet shall be used. All applied formulae must be visible.*	/MP/ /BA-1/ /BA-2/ /BA-3/ /BA-4/ /BA-5/	The Excel calculation spreadsheet are an integral part of the validated monitoring plan. The spreadsheet contained defined and validated formulae for calculation of emission reductions. In addition the monitoring plan provides an explanation and guidance on how to apply the developed calculation tool. TUV has reviewed all Excel calculation spreadsheet provided for the relevant sub-projects. It has been verified that the validated Excel calculation spreadsheet have been used. The calculation is completely traceable. All applied formulae are visible. No information gaps have been identified.	OK	OK
Parameter consistency *Assess whether all internal and external parameters and data used for calculation are applied consistently in the monitoring report and the calculation spreadsheet?* *Consider only the correct data exchange between the monitoring report and the calculation spreadsheet (if any). The evaluation of the correctness of the parameter values itself should be discussed in the chapter "Monitoring Parameters".*	/MP/ /BA-1/ /BA-2/ /BA-3/ /BA-4/ /BA-5/	The Excel – calculation sheet is completely in line with the MR. No deviant parameter values have been used in the calculation sheet. Despite this a justification for the assumed number of marginal hours in the table "2002 High Load Hours" for 846 hours (2006) and (725 hours (2007) should be provided. CR C2 was raised in this context and successfully closed.	~~CR C2~~	OK
Applied formulae	/MP/	the verification team has reproduced the calculation of emission	~~CAR~~	OK

Checklist Item (incl. guidance for the verification team)	**Refe-rence**	**Verifiers Comments** (Means and results of assessment)	**Draft Concl.**	**Final Concl.**
Check if the applied formulae are in accordance with the monitoring plan and / or the approved methodology.		reductions based on the provided parameters and the amount of the emission reduction has been verified. The applied spreadsheet have been also reviewed and examined. It has been verified that the formulae and procedures as defined within the monitoring plan has been appropriately applied. No changes and deviations to the approved spreadsheet have been observed. Nevertheless a CAR C1 has been raised because in Excel file "Emissions" (Benatky) inaccurate formulae in the in table "Grid Forecast" have been observed. The corresponding formulae have been corrected. the verification team has proved the updated calculations and the CAR C1 has been closed.	~~C1~~	
Completeness of calculation *Assess whether the provided calculations are complete and reflect all requirements of the monitoring plan.* *Check especially that no standard or old values have been used for calculation where calculations based on up-to-date data is required.*	/MP/ /BA-1/ /BA-2/ /BA-3/ /BA-4/ /BA-5/	The calculation is completely traceable. No information or calculation gaps have been identified.	OK	OK
6. Quality Management; defined organisational structure, responsibilities and competencies Internal QA/QC and document control				
Management System	/MP/	On the level of the sub-projects the operational system and	~~CAR~~	OK

Checklist Item (incl. guidance for the verification team)	**Refe-rence**	**Verifiers Comments** (Means and results of assessment)	**Draft Concl.**	**Final Concl.**
Check if the GHG data monitoring system is embedded in a (certified) company quality management system, if so, check if all JI monitoring procedures been fully integrated in the project participant's quality management system. If not how the GHG management system has been implemented.	/BA-1/ /BA-2/ /BA-3/ /BA-4/ /BA-5/	management system is either documented in an appropriate manner or structures a quite simple. In particular due to the small size management system and the operational system of the small hydro projects has a quite simple structure. In the course of the verification it has been observed that on the level of the sub-projects the operational system and management system has been appropriately implemented. On the level of the entire project activity project participant has appropriately implemented procedures for data management and processing within the particular stages of the monitoring. The improved system is based on the four-eye principle and provides procedures for double check procedures. A sufficient confidence has been gained that these procedures ensure high quality project management of all sub-projects.	~~H1~~	
Roles and Positions *Check if all roles and positions of each person in the GHG data management process are clearly defined and implemented, from raw data generation to submission of the final data.* *Check further if only duly qualified personnel is involved in the monitoring procedures.*	/BA-1/ /BA-2/ /BA-3/ /BA-4/ /BA-5/	Different tasks within the monitoring are clearly allocated to the personal of the different departments of the Ministry of Industry and Trade. Personal and the corresponding tasks/responsibilities of the project monitoring are clearly defined. Furthermore all procedures have been clearly documented. A sufficient confidence has been gained that the introduced two stage quality assurance system provides procedures and provisions for an accurate and appropriate monitoring of of	OK	OK

Checklist Item (incl. guidance for the verification team)	**Refe-rence**	**Verifiers Comments** (Means and results of assessment)	**Draft Concl.**	**Final Concl.**
		generated emission reductions.		
Trainings *Check if initial trainings have been carried out, in case deemed necessary.*	/BA-1/ /BA-2/ /BA-3/ /BA-4/ /BA-5/	In the course of the verification a sufficient confidence has been gained that the competences of involved staff and responsible persons ensure an appropriate quality of data. The involved personnel is familiar with monitoring procedures and with the technology applied.	OK	OK
Troubleshooting procedures *Assess whether troubleshooting procedures have been implemented.*	/BA-1/ /BA-2/ /BA-3/ /BA-4/ /BA-5/	Please refer to the comment under QA/QC Procedures	OK	OK
Maintenance procedures Are appropriate maintenance procedures in place?	/BA-1/ /BA-2/ /BA-3/ /BA-4/ /BA-5/	All relevant meters are calibrated and sealed.	OK	OK
Internal QA/QC *Assess whether there are any procedures in place on when, where and how checks and reviews are to be carried out, and what evidence needs to be documented? (This might include spot checks by a*	/BA-1/ /BA-2/ /BA-3/	Please refer to the comment under QA/QC Procedures	OK	OK

Checklist Item (incl. guidance for the verification team)	**Refe-rence**	**Verifiers Comments** (Means and results of assessment)	**Draft Concl.**	**Final Concl.**
second person not performing the calculations over manual data transfers, changes in assumptions and the overall reliability of the calculation processes.)	/BA-4/ /BA-5/			
Data archive Check whether all records of monitoring parameters are archived according to the monitoring plan.	/BA-1/ /BA-2/ /BA-3/ /BA-4/ /BA-5/	Yes data archiving is in line with provisions of the monitoring plan.	OK	OK
Data protection Assess whether appropriate measures have been take in order to avoid unintended or intended manipulation of the measured data.	/BA-1/ /BA-2/ /BA-3/ /BA-4/ /BA-5/	This issue has been discussed and a sufficient confidence has been gained that appropriate measures have been take in order to avoid unintended or intended manipulation of the measured data	OK	OK